pumping light to a Raman amplification medium existing on an optical transmission path, to Raman amplify the wavelength division multiplexed signal light being propagated through the Raman amplification medium,

wherein a supervisory signal transferred among said plurality of optical transmission apparatuses is selectively superimposed on the pumping light supplied to said Raman amplification medium, and

wherein when a plurality of pumping lights of different wavelengths are supplied to said Raman amplification medium, said supervisory signal is selectively superimposed on at least one of said plurality of pumping lights of different wavelengths.

3. (ONCE AMENDED) An optical transmission method using Raman amplification according to claim 1, wherein the pumping light to be superimposed with said supervisory signal is selected out of said plurality of pumping lights based on loss wavelength characteristics of said optical transmission path.

5. (ONCE AMENDED) An optical transmission method using Raman amplification according to claim 1, wherein a part of the Raman amplified wavelength division multiplexed signal light input to said optical transmission apparatus through said optical transmission path is led to an optical filter having a passing band in a Raman gain band corresponding to a wavelength of the pumping light superimposed with said the supervisory, signal, to detect said supervisory signal using a light passing through said optical filter.

6. (ONCE AMENDED) An optical transmission method using Raman amplification according to claim 1, wherein the supervisory signal transmitted from a previous stage optical transmission apparatus is detected to superimpose a suppression signal to suppress said detected supervisory signal on the pumping light corresponding to the pumping light superimposed with the supervisory signal from said previous stage optical transmission apparatus, among the pumping lights of different wavelengths to be supplied to said Raman amplification medium.

8. (ONCE AMENDED) An optical transmission system using Raman amplification comprising:

a plurality of optical transmission apparatuses to transmit a wavelength division

multiplexed signal light including a plurality of optical signals of different wavelengths, and

a Raman amplifier to Raman amplify the wavelength division multiplexed signal light being propagated through a Raman amplification medium by supplying a pumping light to said Raman amplification medium existing on an optical transmission path,

wherein said Raman amplifier includes a supervisory signal superimposing section to selectively superimpose a supervisory signal transferred among said plurality of optical transmission apparatuses on the pumping light supplied to said Raman amplification medium,

wherein said Raman amplifier has a plurality of pumping light sources generating a plurality of pumping lights of different wavelengths, and

wherein said supervisory signal superimposing section selectively superimposes said supervisory signal on at least one of said plurality of pumping lights of different wavelengths supplied to said Raman amplification medium from said respective pumping light sources.

10. (ONCE AMENDED) An optical transmission system using Raman amplification according to claim 8, wherein said supervisory signal superimposing section selects the pumping light to be superimposed with said supervisory signal is selected out of said plurality of pumping lights based on loss wavelength characteristics of said optical transmission path.

12. (ONCE AMENDED) An optical transmission system using Raman amplification according to claim 8, wherein said optical transmission apparatus has an optical coupler for branching a part of the Raman amplified wavelength division multiplexed signal light sent from said optical transmission path, an optical filter input with a branched light from said optical coupler and having a passing band in a Raman gain band corresponding to a wavelength of the pumping light superimposed with said the supervisory signal, and a supervisory signal detecting section for detecting said supervisory signal using a light passing through said optical filter.

13. (ONCE AMENDED) An optical transmission system using Raman amplification according to claim 8, wherein when a plurality of said Raman amplifier are provided corresponding to respective repeating areas among said plurality of optical transmission apparatuses, said each Raman amplifier includes a suppression signal superimposing section for superimposing a suppression signal to suppress the supervisory signal from a previous stage optical transmission apparatus detected at the corresponding optical transmission apparatus on the pumping light corresponding to the pumping light superimposed with the supervisory signal,

among the pumping lights of different wavelengths to be supplied to said Raman amplification medium.

15. (ONCE AMENDED) A Raman amplifier comprising:

a pumping light generating section to generate a pumping light; and

a multiplexer to supply the pumping light from said pumping light generating section to a Raman amplification medium, to Raman amplify a wavelength division multiplexed light being propagated through said Raman amplification medium,

wherein said Raman amplifier includes a supervisory signal superimposing section to selectively superimpose a supervisory signal transferred among said plurality of optical transmission apparatuses to transmit said wavelength division multiplexed light on the pumping light supplied to said Raman amplification medium from said pumping light generating section via said multiplexer,

wherein said Raman amplifier has a plurality of pumping light sources generating a plurality of pumping lights of different wavelengths, and

wherein said supervisory signal superimposing section selectively superimposes said supervisory signal on at least one of said plurality of pumping lights of different wavelengths supplied to said Raman amplification medium from said respective pumping light sources via said multiplexer.

17. A Raman amplifier according to claim 15, wherein said Raman amplifier includes a suppression signal superimposing section for superimposing a suppression signal to suppress the supervisory signal from a previous stage optical transmission apparatus on the pumping light corresponding to the pumping light superimposed with the supervisory signal from said previous stage optical transmission apparatus, among the pumping lights of different wavelengths to be supplied to said Raman amplification medium from said respective pumping light sources via said multiplexer.

Please add the following new claim:

19. (NEW) A method of Raman amplifying wavelength division multiplexed signal light, the method comprising:

providing wavelength division multiplexed signal light including a plurality of optical

a9 signals of different wavelengths through a transmission path;

supplying a plurality of pumping lights of different wavelengths to a Raman amplification medium existing on the optical transmission path to Raman amplify the wavelength division multiplexed signal light propagating through the Raman amplification medium; and

selectively superimposing a supervisory signal on at least one of said plurality of pumping lights.

REMARKS

In accordance with the foregoing, the specification and claims 1, 3, 5, 6, 8, 10, 12, 13, 15 and 17 have been amended. Claims 2, 9 and 16 have been cancelled without prejudice or disclaimer. Claims 1, 3-8, 10-15 and 17-19 are pending and under consideration.

REJECTIONS UNDER 35 USC §103

Claims 1, 8 and 15 were rejected under 35 USC 103(a)as being unpatentable over Heidemann ('306), or Suyama ('213), or Deguchi et al. ('721), when taken with Emori et al. (OFC '99) or Walker (OSA). This rejection is respectfully traversed for the reasons stated below.

It is respectfully submitted that although Heindmann illustrates where pump light of an EDFA is modulated by an additional signal, such as a service-channel signal, and the pump light that has not been absorbed in EDF is transmitted to an end portion of an optical transmission link, Heindmann does not teach or suggest wherein "said supervisory signal is superimposed on at least one of said plurality of pumping lights of different wavelengths," as recited in independent claims 1, 8 and 15, as amended.

Regarding Suyama, it is respectfully submitted that although this patent illustrates a technique in which, in an optical communication system provided with a rare-earth-doped fiber amplifier, pumping light is modulated with a high-frequency modulating signal having a period shorter than the life span of fluorescence resulting from an excited state, thereby enabling the transmission of information with the pumping light acting as the carrier, in addition to the transmission of information with signal light, Suyama does not teach or suggest wherein "said supervisory signal is superimposed on at least one of said plurality of pumping lights of different wavelengths," as recited in independent claims 1, 8 and 15, as amended, which is also missing from Heindmann.

Regarding Deguchi et al., it is respectfully submitted that although this patent illustrates